

## Clinical Cases.

---

### A CASE OF TREPHINING FOR TRAUMATIC EPILEPSY.\*

FRACTURE OF THE SKULL FROM A PISTOL-SHOT—CONVULSIONS  
DUE TO IRRITATION OF THE DURA MATER, FROM WHICH  
FRAGMENTS OF BONE WERE REMOVED BY OPERATION.

By CHARLES K. MILLS, M.D.,  
NEUROLOGIST TO THE PHILADELPHIA HOSPITAL, ETC.,

AND

J. WILLIAM WHITE, M.D.,  
SURGEON TO THE PHILADELPHIA HOSPITAL, ETC.

The patient, J. M., aged 26, white, a farmer, was brought to the service for Diseases of the Mind and Nervous System at the Philadelphia Polyclinic and College for Graduates in Medicine. After careful examination, it was determined that the case was one in which trephining was not only justifiable, but, both from a neurological and surgical point of view, imperatively demanded. He was therefore sent to this hospital. One of the resident physicians, Dr. Roberts, has carefully prepared a history of the case.

The patient knows nothing of his family history. He was in an orphan asylum until 14 years old, and was then bound out to a farmer in Delaware, and has been employed at farm labor ever since.

He smokes, chews, and drinks; has been drinking since he was 18 years of age. He denies venereal history. He had the small-pox when a child, but has always been strong and healthy since, and never had any sickness of any kind. He never had epileptic fits before last October.

---

\* Abstract of clinical lecture and report of operation. Lecture delivered and operation performed before the class in the amphitheatre of the Philadelphia Hospital, Jan. 27, 1886.

On the morning of July 4, 1885, while playing cards and drinking with some companions near the railroad track not far from Greenwood, Delaware, a dispute arose, and one of the party drew a revolver and shot the patient through the head. The two men were close together when the shot was fired—the patient in a stooping position over the man with the revolver. The pistol was self-cocking, and of 32 calibre. It was so close to his face that the powder burnt his cheeks, eyes, and forehead very badly. He fell at the report, but did not realize that he had been shot until he put his hand to his head and felt the blood. He was unable to walk or help himself, but did not lose consciousness. He was carried to the town, and conveyed to his home in a carriage, and a physician called. For two months he was confined to his bed on account of a left-sided hemiplegia. For three or four weeks he was unable to see on account of the swelling caused by the powder-burn. At the end of the two months he got up and could walk about, but was unable to work.

From the scar of the wound and the patient's account, it is evident that the ball entered the scalp just above the right temple. He has been told that the surgeon introduced a probe "three and a half inches and brought out some of the brain-substance on the end of it."

The patient thinks that the ball entered from the front, and, glancing off from the skull, passed out again. The facts would support this view. He wore a Derby hat, and *two* holes were found in it—in just the right positions to have been made by the ball entering and passing out.

As stated, the patient was confined to his bed, partially paralyzed, during July and August. Toward the latter part of September he returned to work again, doing light work about the farms. One morning, in the latter part of September, he was told by a man with whom he had slept the night previous, that he had had a fit during the night. He knew nothing of it himself, and did not believe that he had had a fit. He was told that "he kicked, chattered, and ground his teeth, and could not be aroused."

About three weeks after this he had a second fit, which occurred while he was at the supper-table. He was unconscious, and knew nothing until it was all over—a period, he was told, of several minutes. From the first attack until the present time—about four months—he has had seven fits in all.

Just before entering the clinic room on the day of operation the patient had a convulsion. This was the only convulsion he had had since admission to the hospital.

His gait, as he passed around the arena, showed but little of the left-sided hemiplegic condition remaining. A scarcely perceptible halting or dragging of the left foot was all that indicated any difference in power between the right and left sides; the grip of his left hand and the movements of the entire upper extremity, showed nothing peculiar. Neither of the limbs was atrophied;

his face was not drawn in the slightest, and, indeed, had not at any time been so affected.

Examining his head, which had been shaved, *two* scars were found close together in the scalp, and an irregular fracture was felt spreading over a space of about one square inch at a position about two inches to the right of the median line, and one half to one inch in front of the coronal suture. There seemed to be a small depression, surrounded by a slight elevation of the skull, in this locality. The position of these scars and of the fracture beneath, in the frontal bone, corresponded to a point about the junction of the middle portion of the first frontal with the second frontal convolution. The middle of the fracture was at a point about two inches in front of an imaginary line corresponding to the fissure of Rolando. The whole area of fracture was certainly well in advance of the ascending frontal convolution and the entire so-called cortical motor zone.

In the convulsion witnessed just prior to the clinic hour he was completely unconscious; his face and all his limbs, as well as his head and trunk, took part in the spasm; the eyes were distorted; his whole body was twisted somewhat to the right; the spasms were tetanic in character; the limbs were in conditions of tonic spasm in extension. When moved, they were moved as a whole, the rigidity remaining. The spasms were not localized; they were not confined to one limb or to one side of the body.

For several reasons these spasmodic seizures were probably due to irritation of the dura mater, what might be termed dural or meningeal spasms. They were not due to irritation of the cortical motor zone, the form of spasm sometimes spoken of as Jacksonian epilepsy. The scalp wound and fracture, in the first place, were in a position well in front of this motor or Rolandic region. Lesions of the motor cortex cause disorders on the opposite side of the body; irritative lesions cause monospasm or unilateral spasm of the opposite side. These spasms usually show themselves in a definite manner both as to localization and mode of action.

The researches of H. Duret on cerebral traumatism—investigations both physiological and pathological—have thrown considerable light on the rôle which the dura mater and its nerves play in these cases. Irritation of those branches of the trigeminal or fifth pair of nerves which go to the dura mater produces, in addition to hyperæsthesia, pain, and vaso-motor disturbances, reflex spasms of peculiar character. Strong, powerful stimulation of the dura mater, continued and repeated, was shown in certain physiological experiments of Bochefontaine to determine movements in both sides of the face, in the neck, and in all four limbs. The movements of the limbs on the same side were more energetic than those on the opposite side. (Quoted by Duret in his work, "*Sur les Traumatismes Cérébraux*," and also in *Brain*, vol. i., 1878.)

Certainly the phenomena of spasm presented by this case may

be said to correspond closely to those described as the result of dural irritation. The subject of cerebral localization and the operative surgery of the human brain are now fashionable ones with the profession. It is highly important that cases such as the one before us should be thoroughly understood; so understood that they can be differentiated from spasms due to cortical irritation.

The hemiplegia which was present and has disappeared may have been due to a meningeal hemorrhage, which has been largely absorbed.

The operation was performed by Dr. White.

The patient having been thoroughly etherized, a horse-shoe flap of large size was made by Dr. White. No adhesions or extravasations were found beneath the scalp. The skull was found to be fractured in the position already described; the entire area fractured could be covered by the trephine used by Dr. White, which was one of the largest size. The anterior portion of the trephine very quickly made its way through the skull, and subsequently it was found that at that point the inner table was partially separated from the outer. The button, irregular in shape and thickness on account of the old splintering of the inner table, was removed with great care and without wounding the dura mater, and it was then found that the portion remaining was adherent to that membrane. By careful dissection this fragment of fractured bone was finally removed. Two small spicules were picked out of the wound with forceps, and an irregular, jagged mass of bone about half an inch in its great length was found imbedded in the dura mater, one of its points passing through it into the brain substance.

The most rigid antiseptic precautions were used.

The operation was performed between 11 and 12 o'clock January 27th. At 4.30 P.M. his pulse was 108; temperature 100.4°; at 6 P.M. the pulse 90; temperature, 101°F. He was ordered powders of calomel and opium, of each grain  $\frac{1}{10}$ , every two hours. He had slight nausea. At 10.30, 15 grains of bromide of potassium were administered.

January 28th.—At 6.30 A.M., pulse, 82; temperature 100°. At noon his temperature had fallen to 99°. Milk was given. At 6 P.M., pulse, 80; temperature, 99.4°. Fifteen grains of bromide of potassium were given.

January 29th.—At 6 A.M., pulse, 80; temperature, 98.8°. At 6 P.M., pulse, 76; temperature, 99.2°. At 10 P.M., temperature, 99.4°. Nourishment in the form of milk and beef tea was given; the calomel and opium powders were continued; an enema was administered with good result after third trial. The wound was dressed—Lister dressing-spray.

January 30th.—At 6 A.M., pulse, 74; temperature, 99°. At 6 P.M., temperature, 99.4°.

January 31st.—At 6 A.M., pulse, 76; temperature, 99°. At 6 P.M., pulse, 56; temperature, 98.8°. Lister dressing-spray.

February 1st.—At 6 A.M., pulse, 60; temperature, 98°. At

6 P.M., pulse, 64 ; temperature, 98°. At 10 P.M. the temperature had fallen to 97.6°. Milk and beef tea were continued ; milk toast was given ; calomel and opium were continued.

February 2d.—At 6 A.M., pulse, 52 ; temperature, 97.6°. At 2 P.M. the temperature had risen to 98.8° ; it fell again, and at 6 P.M., the record was pulse, 60 ; temperature, 98°.

February 3d.—At 2 A.M. and 6 A.M., pulse, 54 ; temperature, 97.4°. At 6 P.M. pulse, 60 ; temperature, 98.4°.

February 4th.—At 6 A.M., pulse, 60 ; temperature, 98°. At 6 P.M., pulse, 56 ; temperature, 98.8°.

February 5th.—At 6 A.M., pulse, 64 ; temperature, 97.8°. At 6 P.M., pulse, 64 ; temperature, 98.6°.

February 6th.—At 6 A.M., pulse, 66 ; temperature, 97.8°. At 10 A.M., pulse, 90 ; temperature, 98.2°. At 6 P.M., pulse, 64 ; temperature, 99°. At 10 P.M., temperature, 97.6°.

February 7th.—At 6 A.M., pulse, 64 ; temperature, 98.2°.

Milk, beef tea, calomel, and opium, and enemata were used. The patient has at times complained of trifling pain in the head, but ever since reacting from the operation has been entirely rational and in good general condition.

February 10th.—Two weeks after the operation the patient is in every way doing well.

February 11th.—Pulse and temperature were normal and no bad symptoms whatever were present.

In a subsequent number of the *JOURNAL* the further history of the case will be given.